

What is claimed is:

1. A method of automatically determining a need to service a digital image acquisition system including a digital camera with a lens assembly, comprising:
 - (a) analyzing pixels within one or more acquired digital images according to probability determinations that such pixels correspond to blemish artifacts;
 - (b) determining whether a threshold distribution of blemish artifacts is present within one or more of said digital images; and
 - (c) indicating a need for service when at least said threshold distribution is determined to be present.
2. The method of claim 1, wherein said one or more acquired images comprise one or more calibration images.
3. The method of claim 1, said threshold distribution being determined based upon an analysis of the ability of an automatic blemish correction module of said digital image acquisition system to reasonably correct such blemishes within said images.
4. The method of claim 1, further comprising:
 - (a) determining probabilities of dust artifact regions corresponding to said pixels within said digitally-acquired image;
 - (b) associating the dust artifact regions with one or more extracted parameters relating to the lens assembly when the image was acquired;
 - (c) forming a statistical record including dust artifact regions based on the dust artifact determining and associating; and
 - (d) determining said threshold distribution based on predetermined characteristics of said statistical record.

5. The method of claim 4, size or shape, or both, of said dust artifact regions being included within said predetermined characteristics.
6. The method of claim 4, said indicating comprising notifying a user, based on said determining whether said threshold distribution is present, that said digital camera needs to be serviced.
7. The method of claim 1 wherein said one or more acquired images are acquired with specific acquisition setting comprising one or more of aperture, shutter speed, sensitivity, and subject matter.
8. The method of claim 7, wherein said specific acquisition settings are automatically determined in a specific calibration mode on said digital image acquisition system.
9. The method of claim 1, wherein said analyzing is based on defined time interval since last said analyzing.
10. The method of claim 1, wherein said analyzing is based on defined in relations with change of lenses.
11. A method of automatically determining the need to service a digital image acquisition system including a digital camera with a lens assembly, comprising:
 - (a) acquiring multiple original digital images with said digital acquisition device;
 - (b) determining probabilities that certain pixels correspond to dust artifact regions within said images based at least in part on a comparison of suspected dust artifact regions within two or more of said images;
 - (c) forming a statistical dust record including probabilities of dust artifact regions based on the dust artifact determining and associating; and

(d) determining a need for service when the statistical dust record indicates that a predetermined threshold dust artifact distribution is present within digital images acquired with said digital acquisition device.

12. The method of claim 11, further comprising eliminating certain suspected dust artifact regions as having a probability below a first threshold value.

13. The method of claim 12, further comprising judging certain further dust artifact regions as having a probability above said threshold value, such as to be subject to further probability determining including comparison with further acquired images prior to judging whether each said further dust artifact region will be subject to said eliminating operation.

14. The method of claim 11, further comprising determining probabilities that certain pixels correspond to regions free of dust within said images based at least in part on a comparison of suspected dust artifact regions within one or more of said images;

15. The method of claim 11, wherein said probability determining includes weighting suspected dust artifact regions according to one or more predetermined probability weighting assessment conditions.

16. The method of claim 15, said one or more weighting assessment conditions comprising size, shape, brightness or opacity of said suspected dust artifact regions, or degree of similarity in size, shape, brightness, opacity or location with one or more suspected dust artifact regions in one or more other images, or combinations thereof.

17. The method of claim 11, further comprising associating probable dust artifact regions with one or more values of one or more extracted parameters relating to the lens assembly of the digital acquisition device when the images were acquired, said statistical dust record being formed from multiple images including at least two images having different values of one or

more extracted parameters that are mathematically correlated based on known effects of said different values on dust artifact regions appearing within said digital images.

18. The method of claim 17, said one or more extracted parameters comprising aperture size, F-number, magnification, lens type or focal length of an optical system of the digital camera, or combinations thereof.

19. The method of claim 11, further comprising digitally-acquiring additional images with said digital camera, repeating said determining and associating, and updating said statistical dust record including updating said probabilities of dust artifact regions based on the additional dust artifact determining and associating.

20. The method of claim 11, said need for service determination being automatically performed within said digital camera that comprises said lens assembly, a sensor array, processing electronics and memory.

21. The method of claim 11, said need for service determination being performed at least in part within an external processing device that couples with the digital camera that comprises said lens assembly and a sensor array to form a digital image acquisition and processing system that also comprises processing electronics and memory.

22. The method of claim 21, the programming instructions being stored on a memory within the external device which performs the image correction method.

23. The method of claim 11, wherein said dust artifact determining includes dynamically updating said probabilities based on comparisons with suspected equivalent dust artifact regions within said further digitally-acquired images.

24. The method of claim 11, wherein said dust artifact determining of said probabilities is further based on a pixel analysis of the suspected dust artifact regions in view of predetermined characteristics indicative of the presence of a dust artifact region.

25. The method of claim 11, wherein said digital acquisition device captures said images from film images.

26. The method of claim 11, wherein said digital acquisition device comprises a digital camera.

27. A method of automatically determining the need to service a digital image acquisition system including a digital camera with a lens assembly, comprising:

- (a) determining probabilities that certain pixels correspond to dust artifact regions within a digitally-acquired image based at least in part on a pixel analysis of the region in view of predetermined characteristics indicative of the presence of a dust artifact region;

- (b) forming a statistical dust record including probabilities of dust artifact regions based on the dust artifact determining and associating operations; and

- (c) determining a need for service when the statistical dust record indicates that a predetermined threshold dust artifact distribution is present within digital images acquired with said digital acquisition device.

28. The method of claim 27, further comprising eliminating certain suspected dust artifact regions as having a probability below a first threshold value.

29. The method of claim 28, further comprising determining probabilities that certain pixels correspond to regions free of dust within said images based at least in part on a comparison of suspected dust artifact regions within one or more of said images.

30. The method of claim 28, further comprising judging certain further dust artifact regions as having a probability above said threshold value, such as to be subject to further probability

determining including comparison with further acquired images prior to judging whether each said further dust artifact region will be subject to said eliminating operation.

31. The method of claim 27, wherein said probability determining includes weighting suspected dust artifact regions according to one or more predetermined probability weighting assessment conditions.

32. The method of claim 31, said one or more weighting assessment conditions comprising size, shape, brightness or opacity of said suspected dust artifact regions, or degree of similarity in size, shape, brightness, opacity or location with one or more suspected dust artifact regions in one or more other images, or combinations thereof.

33. The method of claim 27, further comprising associating probable dust artifact regions with one or more values of one or more extracted parameters relating to the lens assembly of the digital acquisition device when the images were acquired, said statistical dust record being formed from multiple images including at least two images having different values of one or more extracted parameters that are mathematically correlated based on known effects of said different values on dust artifact regions appearing within said digital images.

34. The method of claim 33, said one or more extracted parameters comprising aperture size, F-number, magnification, lens type or focal length of an optical system of the digital camera, or combinations thereof.

35. The method of claim 27, further comprising digitally-acquiring additional images with said digital camera, repeating said determining and associating, and updating said statistical dust record including updating said probabilities of dust artifact regions based on the additional dust artifact determining and associating.

36. The method of claim 27, said need for service determination being automatically performed within said digital camera that comprises said lens assembly, a sensor array, processing electronics and memory.

37. The method of claim 27, said need for service determination being performed at least in part within an external processing device that couples with the digital camera that comprises said lens assembly and a sensor array to form a digital image acquisition and processing system that also comprises processing electronics and memory.

38. The method of claim 37, the programming instructions being stored on a memory within the external device which performs the image correction method.

39. The method of claim 27, wherein said dust artifact determining includes dynamically updating said probabilities based on comparisons with suspected equivalent dust artifact regions within said further digitally-acquired images.

40. The method of claim 27, wherein said dust artifact determining of said probabilities is further based on a pixel analysis of the suspected dust artifact regions in view of predetermined characteristics indicative of the presence of a dust artifact region.

41. The method of claim 27, wherein said digital acquisition device captures said images from film images.

42. The method of claim 27, wherein said digital acquisition device comprises a digital camera.